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**(54) WELDING METHOD AND WELDING DEVICE
FOR FORMING CHROMIUM OXIDE PASSIVE
FILM IN WELD ZONE AS WELL AS PROCESS
DEVICE**

(57) Abstract:

PURPOSE: To form an oxidized passive film consisting essentially of chromium oxide on the surface of a weld zone by welding the weld zone while supplying gas cont a specific amt. of moisture in an inert gas as a back shielding gas during a welding stage.

CONSTITUTION: A proper amt of the moisture is incorporated into the back shielding gas (inert gas) at the time of welding, by which the formation of the dense oxidized passive film consisting essentially of the chromium oxide on the surface simultaneously with welding is made possible. The moisture content in the back shielding gas at the time of welding is an extremely important factor for forming the chromium oxide passive film and the proper content is 800ppm to 2.5% (vol.%).

On the other hand, the oxidized passive film of a sufficient film thickness is not formed at <800ppm. The film thickness of the chromium oxide increases and a problem, such as weld crack, arises of the content exceeds 2.5%. Further, the oxidized passive film having a high content of the chromium oxide is formed by adding 1 to 10% gaseous hydrogen into the back shielding gas.

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